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FOOD HABITS AND YOUNG STAGES OF NORTH ATLANTIC *ALEPISAURUS* (PISCES, INIOMI).[1]

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INTRODUCTION

Other than a few general statements (Clemens and Wilby, 1961:157; Gibbs and Wilimovsky, in press), there is very little information concerning food habits of the lancetfishes, genus *Alepisaurus.* During a recent exploratory fishing cruise (63-4), the U.S. Fish and Wildlife R/V DELAWARE obtained stomach contents from 36 *Alepisaurus ferox* and four *A. brevirostris,* taken by longline at 16 stations from the offing of New England to the Azores. These collections allowed an investigation of the food of *Alepisaurus* across a large portion of the North Atlantic over a relatively short period of time. In addition to the longline stations, four hauls were made with a modified Scharfe midwater trawl (Scharfe, 1960). Since the hauls were made in approximately the same levels as those in which the longlines fished, examination of this material provided some information concerning the selectivity of the lancetfish in its feeding.

The longlines fished from the surface to about 80 fathoms. At most longline stations, sets were made at about 0600 hours and were hauled before 1500. Each midwater haul lasted less than an hour and reached a depth of 10 to 20 fathoms. All hauls were made at night, when vertically migrating animals would be expected to reach the upper limits of their depth ranges. The positions of the longline stations at which *Alepisaurus* were taken and the midwater trawl stations of DELAWARE 63-4 are shown in Figure 1.

Only five *Alepisaurus* smaller than 200 mm SL (standard length) were available to Gibbs (1960) for comparative purposes, and these could not be specifically identified. In the DELAWARE material, *Alepisaurus* was found to prey heavily on its own kind, and 42 young lancetfishes ranging from 50 to 585 mm SL were obtained from stomachs. Series of both species made specific identification of such small specimens possible.

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[1] Contribution No. 1442 from the Woods Hole Oceanographic Institution.

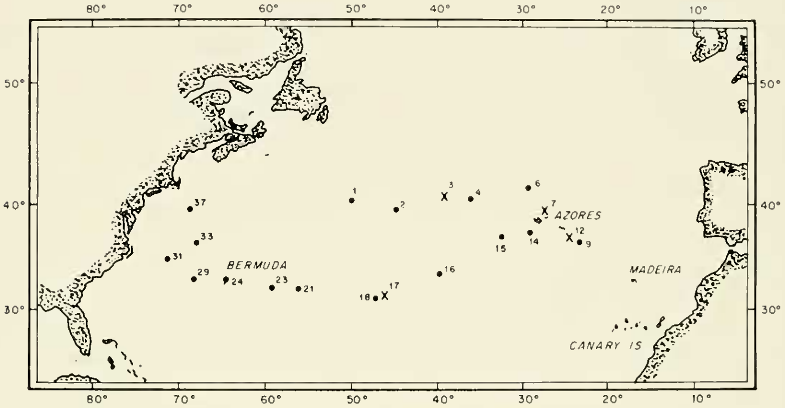

Figure 1. Positions of longline stations at which *Alepisaurus* were taken (●) and midwater trawl stations (X) of DELAWARE 63-4.

ACKNOWLEDGMENTS

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IDENTIFICATION OF YOUNG STAGES

Two series of *Alepisaurus* were present in the stomach contents. The largest fish in each series was identifiable by characters proposed by Gibbs (1960), notably the shape of the head, the body proportions, and the melanophore structure. The largest *A. brevirostris* was 585 mm SL; the largest *A. ferox* was 267 mm SL.

As Gibbs (1960) observed, marked changes in proportions occur with growth, and the morphometric differences which separate large specimens cannot be used to identify small lancetfishes. However, a distinctive melanophore pattern and the relative position of dorsal and pectoral fins do distinguish the young fishes. Examination of one series, the largest specimens of which were clearly *Alepisaurus brevirostris,* showed melanophores along the midventral surface of the body at all growth stages seen (38 specimens, 49-585 mm SL). These melanophores were absent in the other series (5 specimens, 40-267 mm SL), the largest specimen of which was clearly *A. ferox*. Since *A. ferox* greater than 500 mm SL do have a fine peppering of melanophores on the belly, these spots must appear at some stage in growth between about 270 and 500 mm. The origin of the dorsal fin was in advance of the origin of the pectoral fin in all *A. brevirostris,* whereas the dorsal origin was over or behind the pectoral origin in all *A. ferox.*

Alepisaurus from 260 mm SL down to at least 40 mm SL can be separated as follows:

I. Melanophores present on belly, dorsal origin in advance of pectoral origin, snout profile convex. .... *Alepisaurus brevirostris* Gibbs

II. Melanophores absent from belly, dorsal origin over or behind pectoral origin, snout profile generally straight (cf. Fig. 2). .... *Alepisaurus ferox* Lowe

Anal and pectoral fin-ray counts were taken from the young fishes. Many specimens were damaged, hence dorsal counts were impractical. The meristic data (Table 1) show a similar modality to that found by Gibbs (1960).

TABLE 1

Fin-ray count frequencies in young *Alepisaurus*

	Anal rays						Pectoral rays				
	13	14	15	16	17	18	12	13	14	15	16
A. brevirostris	2	13	16	6			2	18	17	1	
A. ferox			1	3		1		1	1	2	1

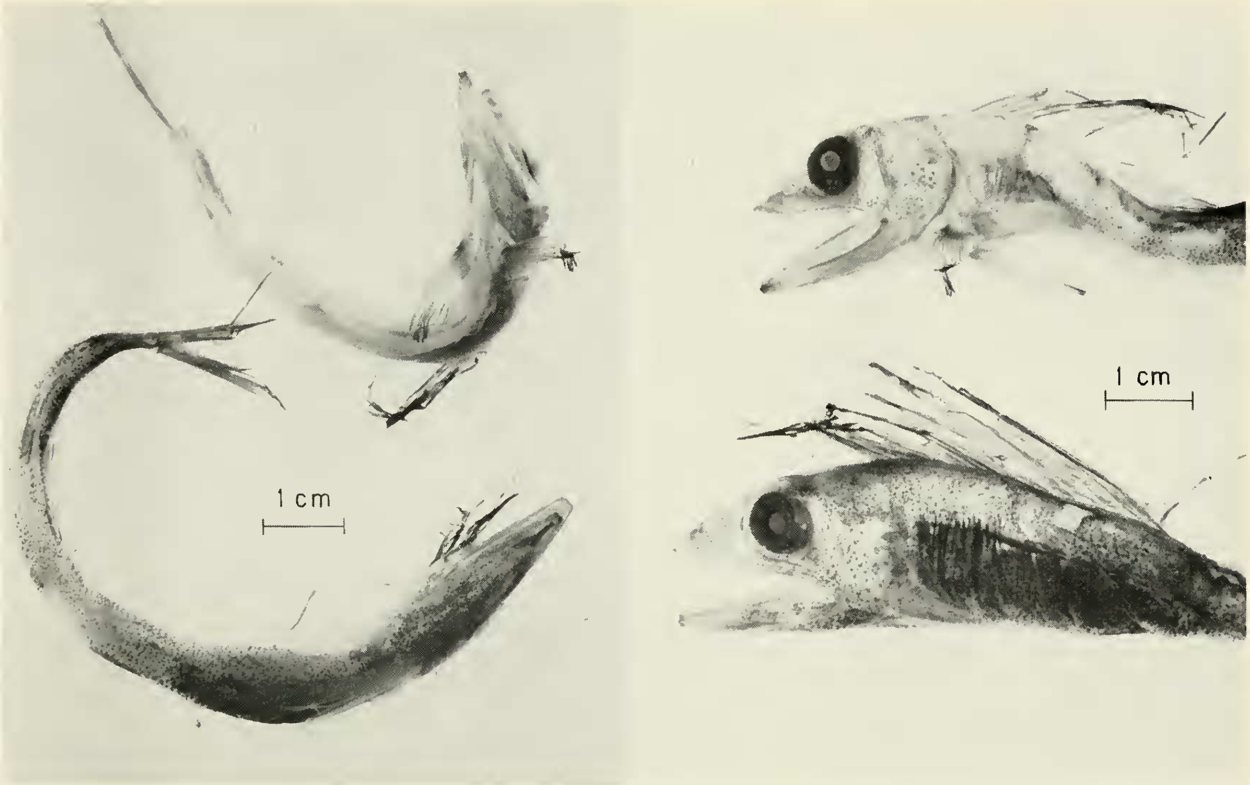

Figure 2. *Alepisaurus ferox,* above left, has no melanophores on the belly, and, above right, dorsal origin behind pectoral origin and snout profile more or less straight. *A. brevirostris,* below left, has melanophores on the belly, and, below right, dorsal origin before pectoral origin and snout profile convex.

Reported here for the first time is a 40 mm lancetfish, MCZ 42377, taken by Isaacs-Kidd midwater trawl during a shakedown cruise of R/V ANTON BRUUN; 39°10′N, 71°52′W; 1015-1420 hr.; 9 Jan. 1963. The snout of this small fish is curved in profile, but there are no melanophores along the belly and the origin of the dorsal is well behind that of the pectoral. There are 16 rays in the anal fin, and 14 rays in the pectoral. I identify this specimen as *Alepisaurus ferox,* and include it in the above analysis. The 56 mm *Alepisaurus* figured by Maul (1946: 155, fig. 20) is referable to *A. brevirostris* on the basis of head shape and fin positions.

The three specimens of *Alepisaurus brevirostris* from 23°30′W (Table 2, Sta. 9, Coll. 2) constitute an eastward range extension for the species of some 1480 miles. Gibbs and Wilimovsky (in press) report no specimens east of 57°W.

FOOD OF *ALEPISAURUS*

(Table 2)

Morning longline sets produced far more lancetfish than night sets. Twenty per cent of the longline stations were made at night, but only one of 45 *Alepisaurus* taken was caught on a set which fished primarily during the dark hours. This may indicate that *Alepisaurus* is a day-time feeder, but might also suggest that the bait is not readily seen by the lancetfish at night. In the dark, luminescent animals, such as the hatchetfish *Sternoptyx*, may be more easily detected. No difference, however, was noted between the stomach contents of the night-caught *Alepisaurus* (Sta. 24) and those of fish from morning sets.

Most animals from *Alepisaurus* stomachs were in excellent condition. Few had been digested to any extent. Rofen (in press) suggests that digestion proceeds almost entirely in the intestine of *Alepisaurus*, and that the stomach serves only for storage. This may be a mechanism allowing the lancetfish to dine at opportunity and to digest at leisure.

TABLE 2

Alepisaurus stomach contents, DELAWARE 63-4, 27 April to 7 June 1963. Each collection represents one jar, usually the stomach contents from one fish. In some cases the stomach contents from two or more fish were put in one jar; these appear as single collections with the number of stomachs indicated. The fork length (FL) of the fish from which the stomach contents were obtained is given when known. Number of specimens and range of standard lengths of fishes in righthand column.

Station 1. 40°09′N, 49°54′W. 0645-1510 hr. 27 Apr. 1963

Collection 1, from *A. ferox:*

Chiasmodon niger	(Pisces, Percoidea)	2, 19 & 38 mm
Diretmus argenteus	(Pisces, Berycomorphi)	1, 14 mm
Urophycis sp.	(Pisces, Anacanthini)	1, 21 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	4, 50-75 mm
Paralepis coregonoides	(Pisces, Iniomi)	2, 41 & 45 mm
Carinaria lamarcki	(Mollusca, Heteropoda)	7
Pterotrachea sp.	(Mollusca, Heteropoda)	10
Phrosina sp.	(Crustacea, Amphipoda)	15
polychaete worm		1

Collection 2, from *A. ferox:*

Schedophilus medusophagus	(Pisces, Stromateoidea)	1, 120 mm

Collection 3, from *A. ferox:*

Carinaria lamarcki	(Mollusca, Heteropoda)	3
Pterotrachea sp.	(Mollusca, Heteropoda)	39
Phronima sp.	(Crustacea, Amphipoda)	2
Phrosina sp.	(Crustacea, Amphipoda)	1

Collection 4, from *A. ferox:*

Paralepis coregonoides	(Pisces, Iniomi)	2, 48 & 49 mm
Pyrosoma sp.	(Tunicata, Thaliacea)	1
Carinaria lamarcki	(Mollusca, Heteropoda)	21
Pterotrachea sp.	(Mollusca, Heteropoda)	65
Phronima sp.	(Crustacea, Amphipoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	7

Collection 5, from *A. ferox:*

2 small pieces of squid	(Mollusca, Cephalopoda)	
Carinaria lamarcki	(Mollusca, Heteropoda)	2
Pterotrachea sp.	(Mollusca, Heteropoda)	31
Brachyscelus sp.	(Crustacea, Amphipoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	16

Collection 6, from *A. ferox:*

Alepisaurus brevirostris	(Pisces, Iniomi)	1, 365 mm
Notolepis rissoi	(Pisces, Iniomi)	1, 89 mm
Paralepis coregonoides	(Pisces, Iniomi)	1, 62 mm
Argonauta sp.	(Mollusca, Cephalopoda)	1
Carinaria lamarcki	(Mollusca, Heteropoda)	5
Pterotrachea sp.	(Mollusca, Heteropoda)	6
Phrosina sp.	(Crustacea, Amphipoda)	5
polychaete worm		1

Collection 7, from *A. ferox:*

Alepisaurus brevirostris	(Pisces, Iniomi)	1, 585 mm
Paralepis sp.	(Pisces, Iniomi)	1, 50 mm
Octopodoteuthid?	(Mollusca, Cephalopoda)	1
Carinaria lamarcki	(Mollusca, Heteropoda)	9
Pterotrachea sp.	(Mollusca, Heteropoda)	6
Cavolinia sp.	(Mollusca, Pteropoda)	2
Brachyscelus sp.	(Crustacea, Amphipoda)	20
Phronima sp.	(Crustacea, Amphipoda)	2
Phrosina sp.	(Crustacea, Amphipoda)	106
nemertean		1
polychaete worms		18

Station 2. 39°20′N, 44°50′W. 0650-1430 hr. 29 Apr. 1963

Collection 1, from *A. ferox*:

Brama brama	(Pisces, Percoidea)	2, 34 & 101 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	1, 223 mm
Paralepis coregonoides	(Pisces, Iniomi)	1, 164 mm
Paralepis sp.	(Pisces, Iniomi)	36, 23-60 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	1, 34 mm
fish larvae		13
doliolid test	(Tunicata, Thaliacea)	1
octopod	(Mollusca, Cephalopoda)	1
Pterotrachea sp.	(Mollusca, Heteropoda)	2
brachyuran	(Crustacea, Decapoda)	1
Palinurus larva	(Crustacea, Decapoda)	1
Brachyscelus sp.	(Crustacea, Amphipoda)	34
Phronima sp.	(Crustacea, Amphipoda)	2
Phrosina sp.	(Crustacea, Amphipoda)	9

Collection 2, from *A. ferox*:

Lepidion lepidion	(Pisces, Anacanthini)	2, 25 & 45 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	3, 60-295 mm
Notolepis rissoi	(Pisces, Iniomi)	1, 105 mm
Paralepis coregonoides	(Pisces, Iniomi)	5, 30-108 mm
Chiroteuthis sp.	(Mollusca, Cephalopoda)	1 head
Taoniinae	(Mollusca, Cephalopoda)	147
Carinaria lamarcki	(Mollusca, Heteropoda)	5
Pterotrachea sp.	(Mollusca, Heteropoda)	1
brachyuran	(Crustacea, Decapoda)	1
small euphausids	(Crustacea, Euphausiacea)	4
Brachyscelus sp.	(Crustacea, Amphipoda)	1
Hyperoche sp.	(Crustacea, Amphipoda)	1
Phronima sp.	(Crustacea, Amphipoda)	3
Phrosina sp.	(Crustacea, Amphipoda)	10

Station 4. 40°17′N, 36 07′W. 0630-1435 hr. 1 May 1963

Collection 1, from *A. ferox*:

Carinaria lamarcki	(Mollusca, Heteropoda)	7
Pterotrachea sp.	(Mollusca, Heteropoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	2
Eurydice sp.	(Crustacea, Isopoda)	3

Collection 2, from *A. brevirostris*:

Alepisaurus brevirostris	(Pisces, Iniomi)	1, 64 mm
doliolid test, containing a *Phronima* sp.	(Tunicata, Thaliacea)	1
Carinaria lamarcki	(Mollusca, Heteropoda)	15
Cavolinia sp.	(Mollusca, Pteropoda)	4
Brachyscelus sp.	(Crustacea, Amphipoda)	17
Phronima sp.	(Crustacea, Amphipoda)	3
Phrosina sp.	(Crustacea, Amphipoda)	50
polychaete worms		2

Collection 3, from *A. brevirostris*:

Carinaria lamarcki	(Mollusca, Heteropoda)	17
Pterotrachea sp.	(Mollusca, Heteropoda)	1
Cavolinia sp.	(Mollusca, Pteropoda)	6
Brachyscelus sp.	(Crustacea, Amphipoda)	44
Phronima sp.	(Crustacea, Amphipoda)	2
Phrosina sp.	(Crustacea, Amphipoda)	125
Platyscelus sp.	(Crustacea, Amphipoda)	1
polychaete worm		1

Collection 4, from *A. brevirostris*:

Anotopterus pharao	(Pisces, Iniomi)	1, 277 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	2, 48 & 56 mm
Carinaria lamarcki	(Mollusca, Heteropoda)	*ca.* 60
Pterotrachea sp.	(Mollusca, Heteropoda)	3
Cavolinia sp.	(Mollusca, Pteropoda)	7
Brachyscelus sp.	(Crustacea, Amphipoda)	69
Phrosina sp.	(Crustacea, Amphipoda)	256
polychaete worm		1

Station 6. 41°20′N, 29°20′W. 1805-1050 hr. 3-4 May 1963

Collection 1, from *A. ferox* 1365 mm FL:

Paralepis coregonoides	(Pisces, Iniomi)	1, 123 mm
Carinaria lamarcki	(Mollusca, Heteropoda)	23
Pterotrachea sp.	(Mollusca, Heteropoda)	12
Phronima sp.	(Crustacea, Amphipoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	9

Station 9. 36°21′N, 23°30″W. 0635-1530 hr. 8 May 1963

Collection 1, from *A. ferox*:

Urophycis sp.	(Pisces, Anacanthini)	1, 9 mm
fish larva		1, 14 mm
Carinaria lamarcki	(Mollusca, Heteropoda)	1
Pterotrachea sp.	(Mollusca, Heteropoda)	29
Brachyscelus sp.	(Crustacea, Amphipoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	2

Collection 2, from *A. ferox*:

Lophius piscatorius	(Pisces, Pediculati)	2, 40 & 48 mm
Cubiceps gracilis	(Pisces, Stromateoidea)	1, 65 mm
Schedophilus medusophagus	(Pisces, Stromateoidea)	1, *ca.* 60 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	3, 69-178 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	2, 24 & 27 mm
fish larvae		8
doliolid tests, one containing a *Phronima*		5
unident. squids, 4 spp.	(Mollusca, Cephalopoda)	4
Carinaria lamarcki	(Mollusca, Heteropoda)	9
Pterotrachea sp.	(Mollusca, Heteropoda)	220
Phronima sp.	(Crustacea, Amphipoda)	5
Phrosina sp.	(Crustacea, Amphipoda)	5

Station 14. 37°25′N, 29°10′W. 0610-1335 hr. 16 May 1963

Collection 1, from *A. ferox* 1585 mm FL:

Schedophilus medusophagus	(Pisces, Stromateoidea)	3, 33-40 mm
Paralepis coregonoides	(Pisces, Iniomi)	1, 129 mm
Carinaria lamarcki	(Mollusca, Heteropoda)	11
Pterotrachea sp.	(Mollusca, Heteropoda)	6

Station 15. 36°55′N, 32°32′W. 0400-1110 hr. 17 May 1963

Collection 1, from *A. ferox* 1437 mm FL:

Lophius piscatorius	(Pisces, Pediculati)	2, 62 & 80 mm
Schedophilus medusophagus	(Pisces, Stromateoidea)	1, 35 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	1, 98 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	3, 28-30 mm
doliolid test	(Tunicata, Thaliacea)	1
Argonauta sp.	(Mollusca, Cephalopoda)	3
Phronima sp.	(Crustacea, Amphipoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	1

Collection 2, from *A. ferox* 1342 mm FL:

Paralepis atlantica	(Pisces, Iniomi)	1, 98 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	1, 28 mm
doliolid test	(Tunicata, Thaliacea)	1
Taoniinae	(Mollusca, Cephalopoda)	1
Phronima sp.	(Crustacea, Amphipoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	24
Platyscelus sp.	(Crustacea, Amphipoda)	2
nemerteans		18
polychaete worm		1

Station 16. 33°20′N, 39°50′W. 0410-1110 hr. 19 May 1963

Collection 1, from *A. ferox* 1265 mm FL:

Cubiceps gracilis	(Pisces, Stromateoidea)	2, 76 & 83 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	7, 71-439 mm
Macroparalepis affine	(Pisces, Iniomi)	2, 64 & 114 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	21, 8-31 mm
fish larvae		17
doliolid tests	(Tunicata, Thaliacea)	29
salps	(Tunicata, Thaliacea)	146
Argonauta sp.	(Mollusca, Cephalopoda)	2
Japetella sp.	(Mollusca, Cephalopoda)	7
unident. squids	(Mollusca, Cephalopoda)	2
Carinaria lamarcki	(Mollusca, Heteropoda)	2
Pterotrachea sp.	(Mollusca, Heteropoda)	remnants
Cavolinia sp.	(Mollusca, Pteropoda)	15
Limacina sp.	(Mollusca, Pteropoda)	3
Brachyscelus sp.	(Crustacea, Amphipoda)	36
Phronima sp.	(Crustacea, Amphipoda)	32
Phrosina sp.	(Crustacea, Amphipoda)	14
Platyscelus sp.	(Crustacea, Amphipoda)	42
polychaete worms		5

Collection 2, from *A. ferox* 1292 mm FL:

Alepisaurus brevirostris	(Pisces, Iniomi)	2, 113 & 124 mm
Alepisaurus ferox	(Pisces, Iniomi)	1, 267 mm
Carinaria lamarcki	(Mollusca, Heteropoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	1
Lanceola sp.	(Crustacea, Isopoda)	1

Collection 3, from *A. ferox* 1325 mm FL:

Alepisaurus brevirostris	(Pisces, Iniomi)	1, 486 mm
Paralepis atlantica	(Pisces, Iniomi)	1, 84 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	1, 22 mm
nemerteans		15

Collection 4, from *A. ferox*:

Alepisaurus brevirostris	(Pisces, Iniomi)	1, 437 mm

Station 18. 31°00′N, 47°05′W. 0555-1320 hr. 21 May 1963

Collection 1, from *A. ferox* 1166 mm FL:

Diplospinus multistriatus	(Pisces, Scombroidea)	4, *ca.* 30 mm
Cubiceps gracilis	(Pisces, Stromateoidea)	1, 84 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	1, 154 mm
Alepisaurus ferox	(Pisces, Iniomi)	1, 91 mm
Paralepis atlantica	(Pisces, Iniomi)	1, 96 mm
Paralepis elongata	(Pisces, Iniomi)	5, 101-162 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	9, 18-30 mm
fish larvae		35
Pyrosoma sp.	(Tunicata, Thaliacea)	1
Abraliopsis sp.	(Mollusca, Cephalopoda)	2

Station 21. 32°00′N, 56°10′W. 0605-1320 hr. 24 May 1963

Collection 1, from *A. ferox* 1068 mm FL:

Brama brama	(Pisces, Percoidea)	2, 37 & 55 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	1, 463 mm
Paralepis sp.	(Pisces, Iniomi)	1, 75 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	11, 21-32 mm
Onychoteuthis sp.	(Mollusca, Cephalopoda)	1
Carinaria lamarcki	(Mollusca, Heteropoda)	1
Cavolinia sp.	(Mollusca, Pteropoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	1

Collection 2, from 3 *A. ferox* 941-1043 mm FL:

Bothus sp.	(Pisces, Heterosomata)	1, 19 mm
Diplospinus multistriatus	(Pisces, Scombroidea)	7, 20-163 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	1, 81 mm
Alepisaurus ferox	(Pisces, Iniomi)	2, 82 & 131 mm
Paralepis coregonoides	(Pisces, Iniomi)	7, 68-99 mm
Lobianchia dofleini	(Pisces, Iniomi)	1, 31 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	5, 20-27 mm
fish larvae		7
doliolid tests	(Tunicata, Thaliacea)	4
salps	(Tunicata, Thaliacea)	2
Argonauta sp.	(Mollusca, Cephalopoda)	4
Japetella sp.	(Mollusca, Cephalopoda)	2
Carinaria lamarcki	(Mollusca, Heteropoda)	3
brachyuran	(Crustacea, Decapoda)	1
Brachyscelus sp.	(Crustacea, Amphipoda)	1
Phronima sp.	(Crustacea, Amphipoda)	4
Phrosina sp.	(Crustacea, Amphipoda)	3

Lanceola sp.	(Crustacea, Isopoda)	1
nemertean		1
polychaete worms		15

Station 23. 32°05′N, 59°10′W. 0605-1340 hr. 25 May 1963

Collection 1, from 4 *A. ferox* 772-1276 mm FL:

Diplospinus multistriatus	(Pisces, Scombroidea)	14, 27-131 mm
Anoplogaster cornuta	(Pisces, Berycomorphi)	1, 11 mm
Regalecus glesne	(Pisces, Allotriognathi)	1, 160 mm
leptocephalus larvae	(Pisces, Apodes)	5, *ca*. 60 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	5, 82-383 mm
Paralepis atlantica	(Pisces, Iniomi)	2, 76 & 100 mm
Paralepis coregonoides	(Pisces, Iniomi)	5, 87-*ca*. 110 mm
Paralepis elongata	(Pisces, Iniomi)	2, 135 & 153 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	12, 15-27 mm
bits of *Pyrosoma* test	(Tunicata, Thaliacea)	
unident. squids	(Mollusca, Cephalopoda)	2
Carinaria lamarcki	(Mollusca, Heteropoda)	2
Pterotrachea sp.	(Mollusca, Heteropoda)	1
Brachyscelus sp.	(Crustacea, Amphipoda)	3
Phronima sp.	(Crustacea, Amphipoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	26
Platyscelus sp.	(Crustacea, Amphipoda)	1
polychaete worms		15

Station 24. 32°45′N, 64°36′W. 1855-0825 hr. 26-27 May 1963

Collection 1, from *A. ferox* 1146 mm FL:

Anoplogaster cornuta	(Pisces, Berycomorphi)	1, 45 mm
Paralepis elongata	(Pisces, Iniomi)	2, 127 & 138 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	2, 27 & 30 mm
Octopodoteuthis sp.	(Mollusca, Cephalopoda)	1
Pholidioteuthis sp.	(Mollusca, Cephalopoda)	1
polychaete worm		1

Station 29. 32°50′N, 68°15′W. 0610-1340 hr. 1 June 1963

Collection 1, from *A. ferox* 1028 mm FL:

Diplospinus multistriatus	(Pisces, Scombroidea)	1, 116 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	2, 20 & 22 mm
doliolid test	(Tunicata, Thaliacea)	1
Phronima sp.	(Crustacea, Amphipoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	1
polychaete worms		3

Station 31. 34°45′N, 71°15′W. 0610-1515 hr. 2 June 1963

Collection 1, from 5 *A. ferox* 1039-1254 mm FL:

Diplospinus multistriatus	(Pisces, Scombroidea)	1, 131 mm
Brama brama	(Pisces, Percoidea)	2, 40 & 95 mm
Anoplogaster cornuta	(Pisces, Berycomorphi)	1, 75 mm
Alepisaurus brevirostris	(Pisces, Iniomi)	2, 124 & 131 mm
Macroparalepis affine	(Pisces, Iniomi)	1, 150 mm
Paralepis atlantica	(Pisces, Iniomi)	5, 93-119 mm
Paralepis coregonoides	(Pisces, Iniomi)	14, 79-120 mm
Paralepis elongata	(Pisces, Iniomi)	2, 61 & 125 mm
Argyropelecus aculeatus	(Pisces, Stomiatoidea)	1, 32 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	6, 14-29 mm

Station 33. 36°27′N, 67°50′W. 0610-1505 hr. 3 June 1963

Collection 1, from *A. ferox* 811 mm FL:

Diplospinus multistriatus	(Pisces, Scombroidea)	5, 61-194 mm
Paralepis coregonoides	(Pisces, Iniomi)	3, 67-106 mm
Sternoptyx diaphana	(Pisces, Stomiatoidea)	3, 20-29 mm
Pterotrachea sp.	(Mollusca, Heteropoda)	2
Phrosina sp.	(Crustacea, Amphipoda)	2
polychaete worms		2

Station 37. 39°23′N, 68°33′W. 0620-1445 hr. 7 June 1963

Collection 1, from *A. brevirostris* 778 mm FL:

Tetraodontidae	(Pisces, Plectognathi)	1, 16 mm
Helicolenus dactylopterus	(Pisces, Scleroparei)	2, 24 & 25 mm
Lepidion lepidion	(Pisces, Anacanthini)	2, 42 & 42 mm
Syngnathus pelagicus	(Pisces, Solenichthyes)	1, 113 mm
Macroparalepis affine	(Pisces, Iniomi)	1, 138 mm
Ommastrephidae	(Mollusca, Cephalopoda)	2
Taoniinae	(Mollusca, Cephalopoda)	6
Brachyscelus sp.	(Crustacea, Amphipoda)	3
Phronima sp.	(Crustacea, Amphipoda)	1
Phrosina sp.	(Crustacea, Amphipoda)	2

With regard to the size of its prey, *Alepisaurus* practices no discrimination. Adapted for swallowing large prey (Marshall, 1955:330), it will also readily devour small creatures. A 1265 mm *A. ferox* (Sta. 16, Coll. 1) had eaten seven *A. brevirostris* ranging from 71 to 439 mm in standard length; another *A. ferox* (Sta. 1, Coll. 7) contained a 585 mm *A. brevirostris* in addition to 106 hyperiid amphipods, each about 20 mm long.

Lancetfish stomachs most commonly contained hyperiid amphipods, heteropods, paralepidids, *Sternoptyx*, and other *Alepisaurus*. At least one of these groups was found at every station, and three or more occurred simultaneously in 66 per cent of the collections. Of the 32 collections, amphipods occurred in 78 per cent, heteropods in 72 per cent, paralepidids in 59 per cent, *Alepisaurus* in 56 per cent, and *Sternoptyx* in 44 per cent. Since these animals do occur so regularly in the stomachs, they must habitually frequent the same depths as does *Alepisaurus*.

Stomach contents reflected local abundances. Heteropods occurred in 17 out of 19 (89%) of the stomachs from stations 1 through 15, and they were also a major constituent of the midwater hauls. Heteropods were found in only 6 out of 13 (46%) of the stomachs from stations 16 through 37. In contrast, *Sternoptyx* had been eaten by 77 per cent of the fish from stations 16 through 37, but by only 44 per cent of the fish from stations 1 through 15. On the southerly leg of the cruise, fishes predominated both in stomach contents and in the midwater haul.

Myctophid fishes were notably absent from most stomach contents. Only one was found, a 31 mm *Lobianchia dofleini* (Sta. 21, Coll. 2). None occurred in the fish from station 9, although a one-hour midwater trawl at station 12 took 101 myctophids of a dozen species. The commonness of these small fishes in midwater hauls makes their absence from *Alepisaurus* stomachs particularly puzzling. Myctophids are noted vertical migrators (Marshall, 1960). If *Alepisaurus* does not migrate extensively, and if its principal depth differs from the day and night levels of myctophids, the duration of the lancetfish's encounter with myctophids would be brief during any diurnal cycle, and consumption of them therefore low.

Completely absent from the stomach contents were the characteristic middle-depth fishes *Gonostoma*, *Stomias*, and *Chauliodus*. These fishes are distributed mainly between 200 and 1500 meters (Haffner, 1952; Marshall, 1960). Their absence from *Alepisaurus* stomachs, and the presence of primarily epipelagic fishes such as *Cubiceps*, *Brama*, and *Paralepis elongata* strengthens the belief (Gibbs and Wilimovsky, in press) that the lancetfish frequents the upper layers.

Little difference was noted between food of *Alepisaurus ferox* and *A. brevirostris*. *A. brevirostris* may favor invertebrates, particularly the hyperiid amphipod *Phrosina*. All *A. brevirostris* stomachs contained these amphipods, but only 75 per cent of those from *A. ferox* did. There were 256 amphipods in an *A. brevirostris* from Station 4 (Coll. 4), and only two in the *A. ferox* from the same station (Coll. 1). The maximum number of *Phrosina* from a single *A. ferox* was 106, and the average number per fish was 9.3. The maximum number of *Phrosina* from a single *A. brevirostris* was 256; 108.3 was the average. Fishes were more common in *A. ferox* stomachs. *Sternoptyx* and paralepidids occurred in 50 and 64 per cent, respectively, of *A. ferox* stomachs, but were found in 0 and 25 per cent, respectively, of the *A. brevirostris* stomachs. Since stomach contents were obtained from only four *A. brevirostris,* and since three came from one station, these comparisons are inconclusive.

Rarely encountered fishes found in the stomach contents were *Anotopterus pharao* (Sta. 4, Coll. 4), *Regalecus glesne* (Sta. 23, Coll. 1), and four pelagic young of *Lophius piscatorius* (Sta. 9, Coll. 2; Sta. 15, Coll. 1).

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